FACT SHEET FOR NPDES PERMIT WA-002106-7
CITY OF QUINCY INDUSTRIAL WASTEWATER TREATMENT PLANT
DATE OF EXPIRING PERMIT - MAY 31, 2006

SUMMARY

The city of Quincy owns a sequencing batch reactor type of industrial wastewater treatment facility that is separate from its municipal sewerage system. The facility receives the process wastewater year around from a potato and vegetable processor. The treated wastewater is disinfected, cooled, and re-aerated before discharging to a U.S. Bureau of Reclamation irrigation return flow ditch that is part of the federal Columbia Basin Irrigation Project.

Earth Tech, Inc. operates the facility under the conditions of an Ecology approved 20 year service agreement that started in October 2000.

The proposed new permit carries over water quality-based seasonal discharge limits for BOD, ammonia nitrogen, fecal coliforms, dissolved oxygen and temperature, and performance-based limits for TSS. The permit contains new water quality-based limits for chlorine.

The monitoring and sampling schedule in the previous permit has been continued in the new permit. The proposed permit also requires another year of quarterly whole effluent toxicity testing in response to extensive facility upgrades in 2005.

In an effort to monitor the long-term integrity of the liner in the aeration basins and the protection of the ground water, the permit requires the submittal of a leak detection plan for the batch reactor aeration basins.

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has authorized the State of Washington to administer the NPDES permit program. Chapter 90.48 RCW defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicants	City of Quincy (Owner) Earth Tech, Inc. (Operator)
Facility Name and Address	City of Quincy Industrial Wastewater Treatment Plant 201 12th Avenue SW Quincy, WA 98848
Type of Facility:	Sequencing Batch Reactor
SIC Code	2037
Discharge Location	Waterbody name: Bureau of Reclamation irrigation wasteway DW237 and W645W Latitude: 47° 12' 04" N Longitude: 119° 53' 17" W.
Water Body ID Number	WA-41-1120 (Potholes Reservoir)

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

HISTORY

The City of Quincy is located in central Washington (Grant Co.) and within the federal Columbia Basin Irrigation Project that supplies irrigation water from the Columbia River to approximately 500,000 acres of production agriculture. The city has owned and operated an industrial wastewater treatment system since the 1960's. The current system is designed to treat the process wastewater from a potato and vegetable processor; ConAgra Foods and Quincy Foods, respectively. ConAgra operates year around (avg flow of 1.63 mgd) and Quincy Foods (avg flow of 0.66 mgd) operates during the vegetable harvest season. Both are permitted (by the state) to discharge to the city's industrial system. No sanitary wastes are discharged into the industrial wastewater system.

In November 1999, the City advertised for and received bids for a project to Design, Build, Finance and Operate (DBFO) its municipal and industrial wastewater treatment facilities. After months of negotiations, the City entered into a 20 year Service Agreement (Privatization Contract) with Earth Tech, Inc. in October 1, 2000 to provide the DBFO services for the municipal and industrial treatment facilities. The Service Agreement, in part, gave full management and control of the facilities to Earth Tech. Earth Tech was able to offer the City its ability to be its own general contractor ("turnkey") and to complete the design and build phase of the municipal and industrial projects. The procedure used included design and construction of each phase of the project for both facilities (i.e., Phase 1included the below ground work, clearing, piping, rough roadways; Phase 2 included concrete work, buildings, finished roadway grading; etc.). During each Phase of construction, the design of the next phase is completed and approved for construction. When each Phase work is completed at one facility (i.e., municipal), the contractor moves to the other facility (i.e., industrial). Earth Tech's Service Agreement with the City of Quincy included construction, operation and maintenance of the upgraded industrial wastewater treatment facility for an initial period of twenty years with a negotiable extension by the end of the eighteenth year.

The service agreement was approved by Ecology on September 29, 2000 as required by Chapter 70.150.040(9) RCW.

The design/build upgrade for the industrial facility was necessary to meet NPDES permit water-quality based discharge limits; BOD, dissolved oxygen, fecal coliforms, temperature, ammonia. Compliance with the ammonia limits was to begin in April 2002, and compliance with all other parameters in September 2005. An amendment to the 1997 facility plan was submitted to Ecology for the upgrade (Earth Tech, 2000) which described the conversion of the secondary portion of treatment facility from a single-basin extended aeration system to a two-basin sequencing batch reactor (SBR) facility. The SBR upgrade construction started in late 2000 and was brought on-line in February 2002.

Earth Tech submitted to Ecology a second amendment to the engineering report that described additional upgrades that were needed to meet NPDES permit water-quality based effluent limits for fecal coliforms, dissolved oxygen, and temperature (Earth Tech, 2005). Compliance with these limits was to begin in September 2005. Construction was completed in September 2005 on a disinfection, an evaporative cooling, and a re-aeration system to meet the discharge limits.

TREATMENT PROCESS

The treatment facility is comprised of primary and secondary treatment.

Primary facility: Process wastewater from both processors is piped separately to the primary treatment facility which is comprised of screening and a clarifier for each stream; Figure 1. Solids from the clarifiers are dewatered using centrifuges, and are trucked off-site for cattle feed. The clarifier effluent is pumped via an 18" force main approximately one mile to the secondary treatment site; SBR.

Secondary treatment facility: The wastewater from the primary facility is directed to one of two earthen walled and lined sequencing batch reactor basins; Figure 2. SBR #2 used to be the extended aeration basin prior to the upgrade, and SBR #1 was constructed from a sludge storage lagoon; lagoon #4. The discharge from each reactor basin is to a lined, earthen walled flow equalization basin. Water from the basin is pumped to the above ground disinfection contact chamber where sodium hypochlorite is added. The contact time is 20 minutes at the design flow (5 cfs).

Water from the chlorine contact basin is sent to a three-cell, fan forced-air cooling tower for temperature control. This system is only operational during the summer months (April-October) when temperature discharge limits are in effect. Water from the cooling tower is pumped to a fine pore diffused aeration basin to increase the dissolved oxygen to meet permit discharge limits. Sodium bisulfite is added to the tower effluent before the aeration basin for dechlorination.

A design feature of the cooling tower includes a temperature monitoring probe at the end of the tower. If the temperature of the wastewater exiting the tower exceeds the permit limit, the water is automatically diverted to lagoon #5.

The discharge from the re-aeration basin gravity flows approximately one mile in a 24" pipe for the discharge to the Bureau of Reclamation's DW237 wasteway; Figure 2. Immediately after discharge the DW237 crosses the West Canal via a siphon and emerges as the W645W wasteway. The wasteway is part of the Bureau's irrigation return flow collection system that discharges to the Potholes Reservoir. Water from the reservoir is re-distributed to the southern portion of the irrigation project area.

Waste Solids: Solids from the SBR system are being sent to the on-site unlined lagoons that were previously used for the extended aeration system; Figure 2. Liquid from the lagoons is directed back to the SBR system.

Design: The design of the treatment system was based on flows in the facility plan (Montgomery Watson, 1997) and as allowed by a 1965 agreement between the city and the U.S. Bureau of Reclamation.

DISCHARGE OUTFALL

Soon after the final effluent pipe exits the re-aeration basin, it leaves city property and extends along the bureau's right-of-way of the West Canal (a main irrigation supply canal) and on private property to the final outfall location at the DW237 wasteway, which is located in the bureau's right-of-way; Figure 2.

PERMIT STATUS

A permit for this facility was issued on **May 31, 2006** . The permit contained seasonal (summer and winter) effluent limitations for: BOD_5; TSS; total ammonia nitrogen; fecal coliforms; dissolved oxygen; and pH. Compliance with the summer ammonia limits began on April 1, 2002, and the winter ammonia limits on November 1, 2002. The compliance with all other limits began on September 1, 2005.

An application for permit renewal was submitted to the Department on January 30, 2006 and accepted by the Department on _?_.

SUMMARY OF COMPLIANCE WITH THE PERMIT ISSUED May 31, 2006

The facility last received an inspection on October 12, 2005. The results of the inspection concluded that the facility was not in continuous compliance with the discharge limits for BOD_5, TSS, pH, and ammonia.

The facility upgrade from extended aeration to an SBR system that was completed in February 2002 was done to bring the facility into compliance with the ammonia discharge limits, which came into effect on April 1, 2002. Unfortunately, the facility has not been in compliance with the ammonia discharge limits since the completion of the 2002 upgrade, and until the completion of the 2005 upgrade.

The non-compliance with the ammonia limits has been primarily due to continuous equipment failures associated with the SBR system, and the use of lagoon #5 as an equalization basin. Prior to the 2005 upgrade, lagoon #5 was used for many years as a flow equalization basin for the old extended aeration treatment system and had accumulated a sludge blanket. The 2000 SBR upgrade continued to use the lagoon for flow equalization. After several years of operation of the SBRs, it was concluded that the decomposition of the sludge resulted in ammonia being released into the SBR treated water, which resulted in discharge ammonia values well in excess of the discharge limits. The continued use of lagoon #5 in the design of the 2000 SBR upgrade was questioned by Ecology for the potential impacts of the sludge. The design consultant used influent/effluent data for lagoon #5 and concluded that the lining of lagoon #5 or removing the existing sludge was not necessary or desirable.

To resolve the problem of reintroducing ammonia into the effluent from the lagoon #5 sludge, the 2005 upgrade included the construction of a new lined flow equalization basin in a small section of lagoon #6 (Figure 2), and the elimination of lagoon #5 as a normal part of the

treatment train. Lagoon #5 would only be used for the temporary storage of flows in excess of the design flow; 5 cfs. Any water sent to lagoon #5 would be sent back to the SBR for treatment.

Since the completion of the 2005 upgrades, the facility has been in general compliance with the ammonia discharge limits; Addendum.

WASTEWATER CHARACTERIZATION

The proposed wastewater discharge is characterized for the following regulated parameters as presented in the permit application.

Table 1: Wastewater Characterization

Parameter	Max Daily	Max Monthly	Long term avg
Flow (mgd)	3.88	3.27	2
BOD (mg/L)	750	443	93
TSS (mg/L)	510	399	114
Ammonia (N) (mg/L)	108	90	30
Fecal Coliforms (#/ 100 ml)	250,000	67,150	14,828
Temperature:			
Winter	12°C	8.9°C	6.2°C
Summer	27°C	24.4°C	19.2°C
pH:			
Min.	7.2 s.u.	7.7 s.u.	
Max:	9.6 s.u.	8.5 s.u.	

The values presented in the permit application are based primarily on the operations of the facility prior to the 2005 upgrade. Since the completion of the 2005 upgrade in September, the quality of the effluent has improved; Addendum.

Parameter	Max Daily	Max Monthly	Long term avg
BOD (mg/L)	-----	97.5	26
TSS (mg/L)	-----	115	38
Ammonia (N) (mg/L)	-----	17.1	1.32
Fecal Coliforms (#/ 100 ml)	-----	134	8

PROPOSED PERMIT LIMITATIONS

Federal and State regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations are based upon the treatment methods available to treat specific pollutants. Technology-based limitations are set by regulation or developed on a case-by-case basis (40 CFR 125.3, and Chapter 173-220 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (40 CFR 131.36). The more stringent of these two limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for the primary treatment facility are taken from the 1997 engineering report prepared by Montgomery Watson and are as follows:

Table 2: Design Standards for Quincy Industrial – Primary plant influent.

Parameter	Design Quantity
Peak monthly flow	4.89 MGD
Instantaneous peak flow	6.98 MGD
BOD_5 influent loading	74,000 lbs/day
TSS influent loading	66,400 lbs/day
TKN influent loading	4700 lbs/day

The design influent values for the primary treatment facility were based on flows and concentrations in the influent from Lamb-Weston and J.R. Simplot (now Quincy Foods) during a 12 month period (November 95 – October 96).

The design criteria for the SBRs and the 2005 upgrades are taken from the amended engineering reports prepared by Earth Tech (2000; 2005) and are as follows:

Table 3: Design Standards for Quincy Industrial – Secondary plant 2005 Upgrades.

Parameter	Design Quantity
Maximum daily flow	3.23 MGD
Maximum month daily flow	4.89 MGD

The maximum daily flow design value is based on meeting the requirements in a 1965 signed agreement between the city and the Bureau of Reclamation that allows the crossing of the Bureau's right of way with an industrial sewerage system and the discharge into the irrigation drain.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

The design of the industrial wastewater facility was based, in part, on the quality and quantity of process wastewater discharged from the potato and vegetable processor that discharge to the system, and meeting the discharge limits in the permit. The single-basin extended aeration basin was sufficient to meet BOD, TSS and pH limits, but not the ammonia limits. The 2000 upgrade to SBRs was needed to meet ammonia limits, and the 2005 upgrades were required to meet the water quality-based limits for dissolved oxygen, fecal coliforms, and temperature. The only technology-based limit has been for TSS.

TSS

There is no process design information for TSS for the SBR's. It is believed that the SBR's were designed to meet the current discharge limits. The limits in the current permit are performance-based that were determined from effluent data for the period June 1991-May 1993, and a discharge flow of 4 MGD. The limits were carried forward into the current permit because there was no performance data for the SBR's when the current permit was issued.

Seasonal performance-based limits were re-evaluated using daily TSS data reported in DMR's for the period June 2002 – March 2006 (n = 196), and as explained in Ecology's Permit Writer's Manual. The SBR's were put on-line in February 2002, and it is recognized that mechanical problems have plagued the facility since it went on-line.

The results of the performance-based analysis provided the following concentration limits. Load limits were based on a discharge flow of 3.23 MGD.

	Summer	Winter
Maximum Daily limit	327 mg/L (8809 lbs/day)	154 mg/L (4148 lbs/day)
Average Monthly limit	163 mg/L (4391 lbs/day)	74 mg/L (1993 lbs/day)

These compared to the current discharge limits:

	Summer	Winter
Maximum Daily limit	218 mg/L (7272 lbs/day)	118 mg/L (3936 lbs/day)
Average Monthly limit	109 mg/L (3636 lbs/day)	59 mg/L (1968 lbs/day)

Because the SBR's have had multiple mechanical problems since they were put on-line, and that adopting the newly determined less stringent performance-based limits would constitute backsliding, the TSS limits in the current permit will be continued onto the proposed permit.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Surface water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin wide total maximum daily loading study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The U.S. EPA has promulgated 91 numeric water quality criteria for the protection of human health that are applicable to Washington State (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the State of Washington.

ANTIDEGRADATION

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall be protected. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the water body's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses. The critical condition for the pollutants in this discharge is flow.

Mixing Zones

This permit authorizes an acute and a chronic mixing zone around the point of discharge as allowed by Chapter 173-201A WAC, *Water Quality Standards for Surface Waters of the State of Washington*. The Water Quality Standards stipulate some criteria be met before a mixing zone is allowed. The requirements and Ecology's actions are summarized as follows:

1. The allowable size and location be established in a permit.
This permit specifies the size and location of the allowed mixing zone.

2. Fully apply "all known available and reasonable methods of treatment" (AKART).
The technology-based limitations determined to be AKART are discussed in an earlier Section of this fact sheet (see Technology-based Limitations).

3. Consider critical discharge condition.
The critical discharge condition is often pollutant-specific or water body-specific and is discussed above.

4. Supporting information clearly indicates the mixing zone would not have a reasonable potential to cause the loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses, result in damage to the ecosystem or adversely affect public health.
The Department of Ecology has reviewed the information on the characteristics of the discharge, receiving water characteristics and the discharge location. Based on this information, Ecology believes this discharge does not have a reasonable potential to cause the loss of sensitive or

important habitat, substantially interfere with existing or characteristics uses, result in damage to the ecosystem or adversely affect public health.

5. Water quality criteria shall not be violated (exceeded) outside the boundary of a mixing zone.
A reasonable potential analysis, using procedures established by USEPA and the Department of Ecology, was conducted for each pollutant to assure there will be no violations of the water quality criteria outside the boundary of a mixing zone.

6. The size of the mixing zone and the concentrations of the pollutants shall be minimized.
The size of the mixing zone (in the form of the dilution factor) has been minimized by the use of design criteria with low probability of occurrence. For example, the reasonable potential analysis used the expected 95th percentile pollutant concentration, the 90th percentile background concentration, the centerline dilution factor and the lowest flow occurring once in every 10 years.

7. Maximum size of mixing zone
The authorized mixing zone does not exceed the maximum size restriction.

8. Acute Mixing Zone

A. Acute criteria met as near to the point of discharge as practicably attainable
The acute criteria have been determined to be met at 10% of the distance of the chronic mixing zone at the ten year low flow.

B. The concentration of, and duration and frequency of exposure to the discharge, will not create a barrier to migration or translocation of indigenous organisms to a degree that has the potential to cause damage to the ecosystem.
The toxicity of pollutants is dependent upon the exposure which in turn is dependent upon the concentration and the time the organism is exposed to that concentration. For example EPA gives the acute criteria for copper as "freshwater aquatic organisms and their uses should not be affected unacceptably if the 1- hour average concentration (in µg/l) does not exceed the numerical value given by (0.960)(e(0.9422[ln(hardness)] - 1.464)) more than once every three years on the average." The limited acute mixing zone authorized for this discharge will assure that it will not create a barrier to migration. The effluent from this discharge will rise as it enters the receiving water assuring that it will not cause translocation of indigenous organism near the point of discharge.

C. Comply with size restrictions
The mixing zone authorized for this discharge meets the size restrictions of WAC 173-201A.

9. Overlap of Mixing Zones
This mixing zone does not overlap another mixing zone

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

DESCRIPTION OF THE RECEIVING WATER

The facility discharges to the U.S. Bureau of Reclamation's irrigation return drain DW237 and W645W (Figure 2) which are currently designated as a Class AA receiving waters in the vicinity of the outfall. Water in these drains discharges to the Potholes Reservoir which is on the state's 303(d) list for impaired waterbodies for dieldrin. Significant nearby non-point sources of pollutants into the drain include irrigated crop lands that are part of the Columbia Basin Irrigation Project.

Since the Potholes Reservoir is a lake class, the irrigation drains are classified as AA as per WAC 173-201A-120. Characteristic uses include the following:

water supply (domestic, industrial, agricultural); stock watering; fish migration; fish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation. Water quality of this class shall markedly and uniformly exceed the requirements for all or substantially all uses.

SURFACE WATER QUALITY CRITERIA

Ecology revised and adopted the surface water quality standards in 2003. Only portions of the new "use-based" standards have been approved by EPA; www.ecy.wa.gov/programs/wq/swqs/rev_rule.html.

It appears that none of the revised standards that are applicable to the current industrial effluent and receiving waters (drains) have been approved by EPA. Those standards not approved include: Fresh water designated uses and criteria; bacteria; dissolved oxygen; temperature; toxic substances. Therefore, the 1997 surface water standards will be used for this permit.

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliforms	50 organisms/100 mL maximum geometric mean
Dissolved Oxygen	9.5 mg/L minimum
Temperature	16 degrees Celsius maximum or incremental increases above background
pH	6.5 to 8.5 standard units
Turbidity	less than 5 NTU above background
Toxics	No toxics in toxic amounts (e.g., ammonia)

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

In October 1998, EPA approved a seasonal TMDL for the receiving water (DW237 and W645) for BOD, ammonia nitrogen, and fecal coliforms. Seasonal limits were determined in recognition that flows in the receiving water varies with the irrigation season.

The TMDL values for BOD and ammonia were determined by Ecology (Pelletier, 1994) using the QUAL2E model developed by EPA. Calibration and verifications were done using data from a receiving water study (CH_2M-Hill, 1992).

The 2000 upgrade to the SBR system was done to meet the TMDL-based ammonia discharge limits, and the 2005 upgrades were done to meet the TMDL-based limits for dissolved oxygen, fecal coliforms, and temperature.

Mixing Zones:

A mixing zone is authorized for each season in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and is defined as follows:

> The mixing zone shall not extend more than 300ft downstream from the effluent's entry into drain DW237; 25% of the stream flow shall be allowed to meet chronic criteria and 2.5% of the flow shall be allowed to meet acute criteria.

The seasonal dilution factors for the receiving water were determined by Ecology (Pelletier, 1994) based on chemical and flow data measured during a receiving water study (CH_2-M Hill, 1992).

	Acute	Chronic
Aquatic Life		
Ammonia (summer)	1.1	2.1
Ammonia (winter)	1.0	1.1

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating surface water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of surface water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The critical conditions for the irrigation drain are explained in Ecology's determination of waste load allocations for BOD, ammonia, and fecal coliforms; Pelletier, 1994.

TMDL BOD:

Values were determined to protect the receiving water for a dissolved oxygen concentration of 8 mg/L. At the time of the modeling, Ecology determined that this value was protective of the beneficial uses of the receiving stream. Load values were based on an effluent flow of 4 MGD.

	Monthly Average	Daily Maximum
Winter (Nov-March)	65 mg/L; 2168 lbs/day	130 mg/L; 4337 mg/L
Summer (Apr-Oct)	51.1 mg/L; 1705 lbs/day	95.2 mg/L; 3176 lbs/day

TMDL Ammonia:

The ammonia values originally determined by Pelletier were updated during the preparation of the 1996 discharge permit to reflect new EPA criteria. The updated values were made part of the TMDL.

	Monthly Average	Daily Maximum
Winter (Nov-March)	1.45 mg/L; 48.2 lbs/day	2.90 mg/L; 96.7 mg/L
Summer (Apr-Oct)	1.19 mg/L; 39.8 lbs/day	2.39 mg/L; 79.8 lbs/day

Fecal Coliforms: The daily maximum limit for both seasons is 50/100 mL. There is no monthly average limit.

pH: There is no effluent data for alkalinity to determine a reasonable potential of the effluent from the new SBR system to exceed the surface water standards; 6.5 – 8.5. An analysis done for the current permit did not show a reasonable potential for the effluent to exceed the criteria.

There is no pH design information for the SBR system. And there is no information to suggest that the processors that discharge to the facility have changed their operational practices that would cause the effluent to exceed the criteria.

It has been decided that the current permit limits will be extended to the proposed permit; >6 and <9 s.u. In addition, some alkalinity testing of the final effluent will be required in the permit.

Temperature: The impact of the effluent on the temperature of the receiving stream was evaluated when the current permit was drafted in 2001. EPA's DESCON program for calculating the mixture of two flows was used to determine the impact of the effluent on the receiving stream. Based on receiving water and effluent data for 1997-2000 it was determined that there was a reasonable potential to exceed the Class AA temperature criteria during the summer season.

Using an iterative process and the EPA mixing model, it was determined that an effluent temperature of 22.5°C during the summer season would result in meeting the Class AA water quality criteria at the boundary of the mixing zone. This limit was put into the current permit. The design of the cooling tower that was part of the 2005 upgrade was based on meeting this limit.

Chlorine: The 2005 upgrade included the construction of a chlorine disinfection basin and an injection system to add sodium bi-sulfite in the cooling tower effluent for de-chlorination. Residual chlorine data has been submitted for February and March 2006. Chlorine analysis is being done on-site using a DPD based ultra-low level method; 2-500 ug/L.

A reasonable potential analysis was done to determine if the effluent will exceed the water quality criteria: acute = 19 ug/L; chronic = 11 ug/L. The data used for the analysis is presented in Appendix C. It was determined that there is a reasonable potential to exceed the water quality criteria based on the values submitted to Ecology. The analysis determined the following permit limits that are needed to meet the criteria in the receiving stream:

Average monthly: 8 ug/L
Maximum daily: 20 ug/L

WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Acute toxicity tests measure mortality as the significant response to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests are providing an indication of the potential lethal effect of the effluent to organisms in the receiving environment.

Chronic toxicity tests measure various sublethal toxic responses such as retarded growth or reduced reproduction. Chronic toxicity tests often involve either a complete life cycle test of an organism with an extremely short life cycle or a partial life cycle test on a critical stage of one of a test organism's life cycles. Organism survival is also measured in some chronic toxicity tests.

Accredited WET testing laboratories have the proper WET testing protocols, data requirements, and reporting format. Accredited laboratories are knowledgeable about WET testing and capable of calculating an NOEC, LC_{50}, EC_{50}, IC_{25}, etc. All accredited labs have been provided the most recent version of the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* which is referenced in the permit. Any Permittee interested in receiving a copy of this publication may call the Ecology Publications Distribution Center 360-407-7472 for a copy. Ecology recommends that Permittees send a copy of the acute or chronic toxicity sections(s) of their permits to their laboratory of choice.

Quarterly WET testing was required by the current permit for one year, beginning with the July-Sept 2002 quarter; all quarterly WET testing was completed and submitted by the Permittee. In addition, WET testing was done in August 2004 and January 2005 prior to the submission of the application as required by the permit.

Upon receipt of the results, they are transmitted to Ecology's HQ for QA/QC review and interpretation. Based on the results of the Oct 2002 test results, it was determined by the reviewer that a chronic WET limit is needed in the proposed permit. The limit would be set at the CCEC; chronic critical effluent concentration. The CCEC is the maximum concentration of effluent during critical conditions at the boundary of the mixing zone.

In addition to a chronic limit, the reviewer also determined that an acute WET limit is required. This was based on the results of the December 2002 test results. The limit would be set at the ACEC (acute critical effluent concentration) which is the maximum concentration of effluent during critical conditions at the boundary of the zone of acute criteria exceedance.

All samples collected for WET testing were collected after the SBR's were put online, and before the 2005 upgrades; disinfection, cooling towers, re-aeration basin; removal of lagoon #5 from the routine operations of the treatment system.

Based on these changes that could result in a decrease in effluent toxicity, WET limits will not be put in the proposed permit. Instead, another round of quarterly toxicity testing for one year will be required. This decision is based on WAC 173-205-060(2) that requires a Permittee to demonstrate that no change has occurred in the facility that would cause or increase effluent toxicity.

Toxicity from Non-toxic substances

As part of Ecology's review of the WET test results for the industrial effluent, it was noted that the samples had a high conductivity. Elevated salt concentrations and/or ion imbalance in the wastewater can cause toxicity.

The following language was drafted by Ecology's WET test QA review staffer that addresses possible toxicity due to dissolved solids in the effluent.

> Goodfellow et al (2000) have determined that total dissolved solids (TDS), the individual ions within TDS, or ion imbalances within TDS can all cause adverse effects to the common whole effluent toxicity (WET) test organisms. Quincy Industrial samples have shown conductivity measurements as high as 1,500 µhmos/cm or higher indicating that the toxicity observed in the tests conducted on these samples could have TDS as a factor. Toxicity due solely to an imbalance of the common ions (calcium, sodium, magnesium, chlorides, etc.) should be regulated differently than toxicity caused by a heavy metal, organic chemical, or ammonia. Treatments such as reverse osmosis to remove TDS are expensive. Imbalances of the common ions could represent deficiencies as well as excesses of these ions. The imbalances might be immediately corrected upon combining with receiving water. Depending on receiving water conditions, additions of the common ions might even be beneficial.
>
> Aquatic toxicologists have done extensive testing of the reaction of the standard WET test organisms to various combinations of the common ions and produced models for predicting adverse effects. If a lab measures the concentration of the common ions in Quincy Industrial samples taken for WET testing, then one of the models or an equivalent method could be used as a screen for toxicity solely related to TDS. If the predicted toxicity matches the measured toxicity, then toxicity can be assumed to be due to the

common ion constituents of TDS. Consideration can then be given to the specific steps to take to evaluate the real environmental risks and the appropriate monitoring and pollution control measures to address them.

Ecology's QA reviewer also drafted WET test language for the permit that addresses the potential toxicity due to dissolved salts. This language will be incorporated into the permit and includes:

- The analysis of cations and anions in the WET test sample by the test lab.
- The option of using the receiving water as the dilution water for the WET test.
- Pending Ecology approval, effluent samples may be modified to account for ion imbalance.
- The recommendation for the use of a full dilution series in the toxicity tests.

The reviewer has also informed this office of test labs that are capable and experienced in dealing with potential salt toxicity. These are available upon request.

HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the applicant's discharge does not contain chemicals of concern based on existing data or knowledge.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect beneficial uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

This Permittee has no discharge to ground and therefore no limitations are required based on potential effects to ground water.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

Wastewater Influent: The current sampling frequency (1/ 2 weeks) and method (24hr composite) for BOD and TKN will be continued to the proposed permit. These values represent the quality of water entering the primary treatment facility.

The current permit does not require the reporting of the inflow to the primary treatment facility, although flow is measured. The proposed permit will require that the influent flow be reported. These values can be used to compare to the design values.

Wastewater – Final Effluent: The current sampling frequencies, methods, and list of parameters will be unchanged from the current permit. Some additions will be the daily measurement of residual chlorine, and some limited alkalinity testing to allow for the evaluation of pH on the receiving water for the next permit.

Final Effluent Sampling- Point of Compliance: The sampling location for the final effluent and point of compliance is just after the re-aeration basin. This is approximately one mile from where the wastewater discharges into the receiving water. There are several reasons for this location:

1. The city property boundary is very near the location of the re-aeration basin. Private property and/or Bureau right-of-way extend along the entire length of the underground effluent pipe from the boundary to the receiving stream.
2. There is no power at the final outfall location, and the outfall pipe is located within Bureau right-of-way along the receiving stream.

All of these make locating a sampler further downstream from the treatment facility problematic and it also prevented any part of the 2005 upgrade structures to be located near the receiving water.

Receiving Water: The testing schedule for the receiving water upstream of the outfall will continue into the proposed permit.

EFFLUENT LIMITS BELOW DETECTION

The water quality-based effluent limits for chlorine in the wastewater is near the capability of current analytical technology to detect. The Method Detection Level (MDL) is the minimum concentration of an analyte that can be measured and reported with a 99 percent confidence that its concentration is greater than zero as determined by a specific laboratory method. For maximum daily limits, if the concentrations are below the MDL the Permittee reports ND for non-detectable. For average monthly limits, all values above the MDL are used as reported and all values below the MDL are calculated as zero.

EFFLUENT LIMITS BELOW QUANTITATION

The water quality-based effluent limits for chlorine in the wastewater is near the capability of current analytical technology to quantify. The Quantitation Level is the level at which concentrations can be reliably reported with a specified level of error. For maximum daily effluent limits, if the measured effluent concentration is below the Quantitation Level, the Permittee reports NQ for non-quantifiable. For average monthly effluent limits, all effluent concentrations below the Quantitation Level but above the Method Detection Level are used as reported for calculating the average monthly value.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories*.

The laboratory at this facility is accredited for:

Ammonia	pH
COD	TSS
Nitrate	Fecal Coliforms
Nitrite	Total Coliforms

For compliance purposes, the lab will need to start the accreditation process for residual chlorine.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

SPILL PLAN

There are some chemicals that are stored at the treatment site. An above ground anhydrous ammonia tank is located at the primary plant site. Ammonia is added to the effluent from the primary treatment site before it is pumped to the SBRs to control filamentous growth in the basins. The additions are dependent on the season and type of vegetables being processed. A leak of this tank would not enter into any surface waters.

Above ground tanks of hypochlorite (12.5% solution) and sodium bisulfite (38% solution) are located at the secondary treatment site for disinfection. Both tanks have containment. Based upon a site inspection, it is not likely that any spill could reach a surface water.

Therefore, the Department has determined that the Permittee does not have the potential to cause water pollution if these chemicals are accidentally released.

SOLID WASTE PLAN

Solids from the primary clarifiers are dewatered and trucked off site for cattle feed. Waste solids from the SBRs are sent to the onsite lagoons for storage; Fig. 2.

Lagoon #6 was long used as a sludge storage site for the previous extended aeration treatment system. It has been in an evaporative dewatering mode for several years in preparation for solids

removal. Solids have also accumulated in lagoon #5 during its extensive use as a flow equalization basin.

The disposal of these onsite sludges is addressed in the service agreement between the city and Earth Tech. Grant County Health will most likely be the permitting authority for this disposal.

Based on the management of the solid wastes at the site, the Department has determined that the Permittee has a minimal potential to cause pollution of the waters of the state from leachate of solid waste.

TREATMENT SYSTEM OPERATING PLAN

In accordance with state and federal regulations, the Permittee is required to take all reasonable steps to properly operate and maintain the treatment system (40 CFR 122.41(e)) and WAC 173-220-150 (1)(g).

An update to the O&M manual for the SBR system (City of Quincy, 2002) has been submitted that includes the 2005 upgrades; City of Quincy, 2005.

An event occurred in April/May 2006 that requires consideration and inclusion into the O&M manual. One of the SBRs was emptied to replace all of the aeration membranes. During this downtime, the membranes in the second SBR also failed. One of the two food processors was operating (effluent flow approximately 1.5 MGD) and there was minimal available storage volume in the sludge storage ponds and lagoon #5. Fortunately, the processor was able to schedule an earlier shutdown for O&M and sanitation.

The 2002 O&M manual must address a worst caste scenario when both SBRs are down and one or both food processors are discharging.

SBR BASIN LEAK DETECTION

It was discovered during the review of engineering documents for the preparation of this Fact Sheet and permit that Ecology's guidance for lined impoundments and ground water protection was not conveyed to Earth Tech when the engineering report for the SBRs was reviewed and approved.

Ecology's ground water quality standards implementation guidance (Ecology, 1996) states that impoundments which have double liners with leak detection are not considered to have a potential to impact ground water. A monitoring plan for this type of construction is therefore not needed to insure leakage is not impacting ground water. Any other type of lined impoundment could require the development of a monitoring plan to detect liner leakage and potential impacts to the ground water.

If a single synthetic liner is used the potential to contaminate ground water can be assessed by evaluating the volume of water discharged to the aquifer and the mass loading of contaminants infiltrating to ground water. The volume of wastewater discharge is calculated by using the following equation: $Q = KA(D_P/L_T) - ET$

Q = discharge (ft^3/day)
K = liner permeability (ft/day)
A = surface area of the impoundment (ft^2)
D_P = average depth of wastewater in the impoundment (ft)
L_I = liner thickness (ft)
ET = evapotranspiration (ft^3/day)

The mass loading (lbs/day) is then calculated by using the following equation: Mass Loading = Q x C x 8.34

Q = discharge (mgd)
C = concentration of contaminants in wastewater (mg/L)

The impact to ground water quality can be evaluated by appraising the assimilative capacity of the aquifer based on the hydrogeologic conditions and the mass loading to the aquifer.

Based on the drawings presented in the 2000 engineering report for the SBR upgrade, both basins appear to be single lined. It is unknown what type or thickness was used because Ecology has no record of receiving plans and specifications for the basins other than those given in the engineering report; Earth Tech, 2000. The existing lined extended aeration basin that was used prior to the upgrade was converted to one of the SBR basins (SBR #2), and lagoon #4 was converted to the other: SBR #1; Fig. 2.

The single liner construction requires that some form of leak detection be installed or used to verify the integrity of the liner and the protection of the ground water over the years since and after its installation.

The permit will require that Earth Tech submit to Ecology a plan to detect basin leakage and its potential to impact ground water. Currently there is no guidance for the development of a leak detection plan. However, Ecology has been working with other dischargers who have existing ponds or new impoundment construction to install leak detection, and would be most willing to assist in the development of a plan.

The existing lagoons at the site that have historically been part of the treatment process and continue to be used for sludge and emergency storage are not lined. Most likely all leak but at a somewhat reduced rate given the long years of sludge blanket buildup. Ecology generally does not require existing unlined lagoons to be retrofitted with liners unless cleaning or sludge removal activities have disrupted the integrity of the lagoon bottom. Until this happens, liners will not be required for the existing lagoons and a leak detection system for these structures will not be required in this permit.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual industrial NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards for Surface Waters, Sediment Quality Standards, or Water Quality Standards for Ground Waters, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. The Department proposes that this proposed permit be issued for five years.

CO-PERMITTEES

Earth Tech (operator) and the city of Quincy (owner) will be co-permittees, and both will be listed on the cover page of the permit. The change from a single permittee (city) to co-permittees occurred as part of a settlement of a Clean Water Act citizen permit appeal in 2004. The change was supported by the following statement:

> Adding Earth Tech as a co-permittee would comply with NPDES requirements (40 CFR, Part 122.21(b), and be consistent with the city's municipal state waste discharge permit that lists the city as the owner and Earth Tech as the operator. Adding Earth Tech as a co-permittee would also allow Ecology to interact directly with Earth Tech to resolve permit compliance issues, since the 20 year service agreement gives Earth Tech, ". full management and control of the Facilities." (Service Agreement Section 6.1).

Supporting information on the design/build/operate agreement is given in the History section of this Fact Sheet.

REFERENCES FOR TEXT AND APPENDICES

City of Quincy. 2005. City of Quincy Industrial Secondary Wastewater Treatment Facility 2005 Process Upgrades Operations & Maintenance Manual, Final. December

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1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

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Goodfellow, W.L., L.W. Ausley, D.T. Burton, D.L. Denton, P.B. Dorn, D.R. Grothe, M.A. Heber, T.J. Norberg-King and J.H. Rodgers. 2000. Major Ion Toxicity in Effluents: A Review with Permitting Recommendations. *Environ Toxicol Chem* 19: 175-182.

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1994. Permit Writer's Manual. Publication Number 92-109

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Laws and Regulations(http://www.ecy.wa.gov/laws-rules/index.html)

Permit and Wastewater Related Information
(http://www.ecy.wa.gov/programs/wq/wastewater/index.html

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APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this Fact Sheet. The permit contains conditions and effluent limitations which are described in the rest of this Fact Sheet.

The Department will publish a Public Notice of Draft (PNOD) on August 31, 2006 in the Quincy Valley Post Register to inform the public that a draft permit and fact sheet is available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
4601 North Monroe Street
Spokane, WA 99205-1295.

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, 509-329-3524, or by writing to the address listed above.

The permit and Fact Sheet were written by Don Nichols.

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Mixing Zone--An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Responsible Corporate Officer-- A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at http://www.ecy.wa.gov.

Chlorine:

Effluent Chlorine (ug/L; Feb & Mar 06)
251
19
113
108
107
144
170
159
192
141
101
109
390
200

chlorine stats

Column1	
Mean	157.4286
Standard Error	23.21844
Median	142.5
Mode	#N/A
Standard Deviation	86.87543
Sample Variance	7547.341
Kurtosis	3.477269
Skewness	1.400187
Range	371
Minimum	19
Maximum	390
Sum	2204
Count	14

chlorine percentile

Point	*Column1*	*Rank*	*Percent*
13	390	1	100.00%
1	251	2	92.30%
14	200	3	84.60%
9	192	4	76.90%
7	170	5	69.20%
8	159	6	61.50%
6	144	7	53.80%
10	141	8	46.10%
3	113	9	38.40%
12	109	10	30.70%
4	108	11	23.00%
5	107	12	15.30%
11	101	13	7.60%
2	19	14	0.00%

CV = 86.9/157
= .55

Summer dilution factors: acute = 1.1; chronic = 2.1
Number of samples for compliance: 20

APPENDIX D--RESPONSE TO COMMENTS

Quincy Industrial – Approximate Permit Actions Timeline

	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2006								Issue Permit				
2007							<--------	-- WET testing O&M Manual - Update SBR leak detection plan	--------→	←------	-- WET testing -	------→
2008	←----------	--- WET testing –	-----→	←-------	--WET testing	-------→						
2009												
2010	WET testing for permit renewal							WET testing for permit renewal				
2011		Permit Application						Permit Expires				

ADDENDUM

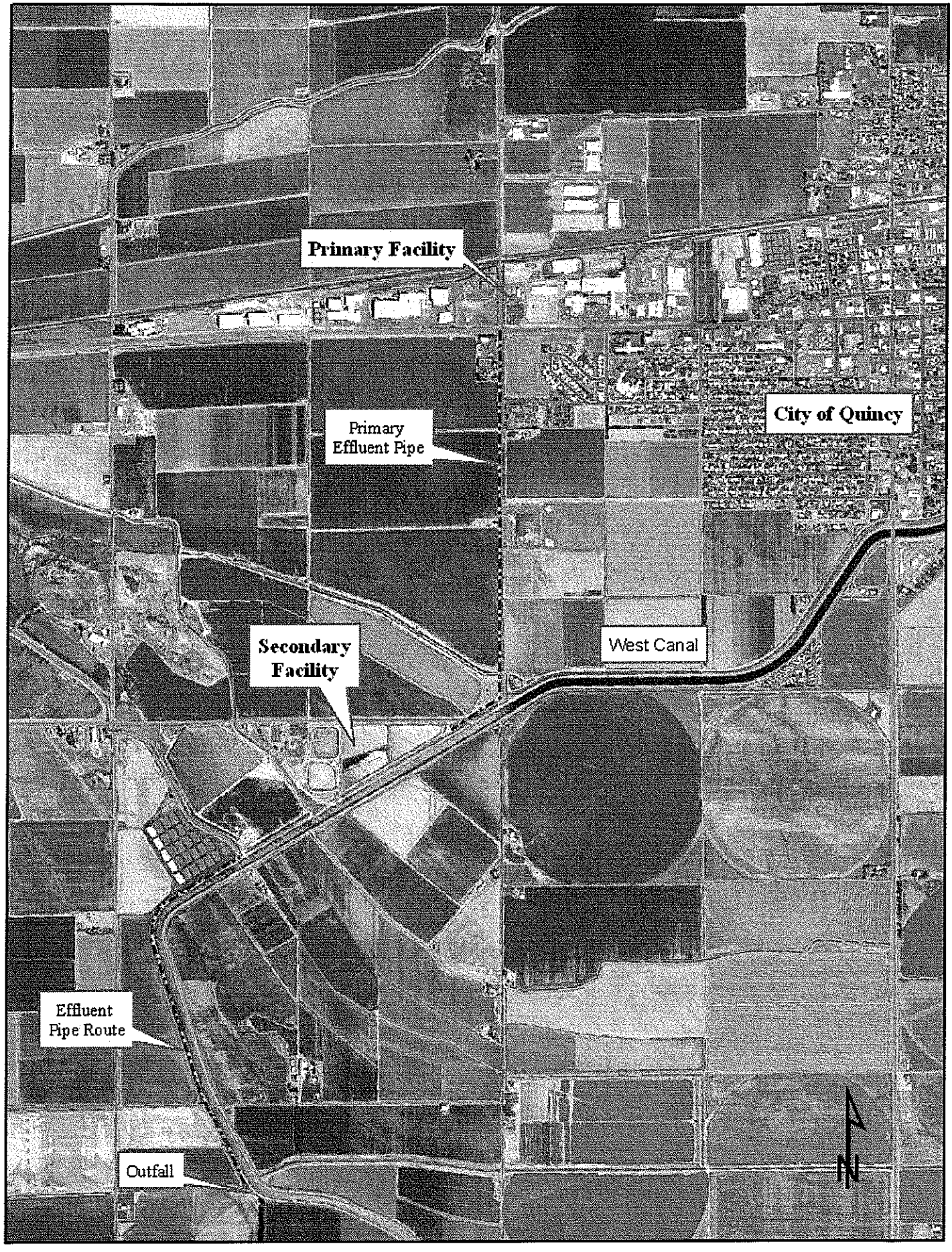

Figure 1. Quincy Industrial Treatment facility and outfall

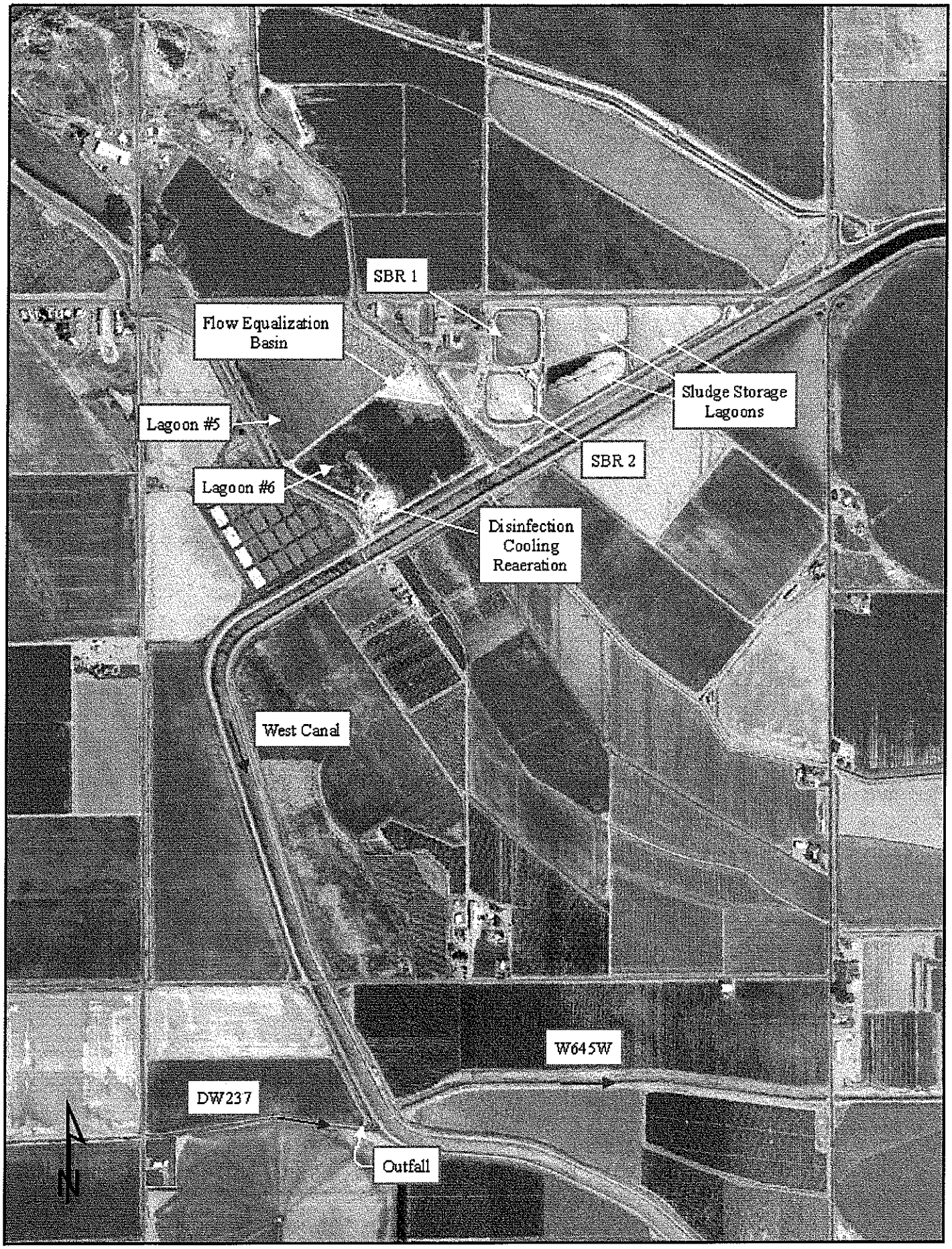

Figure 2. Quincy Industrial Secondary Treatment facility and outfall

Quincy Industrial

Influent

	BOD				TKN (as N)			
	AVG LBS/DAY		MAX DAILY LBS/DAY		AVG LBS/DAY		MAX DAILY LBS/DAY	
	Value	QLF	Value	QLF	Value	QLF	Value	QLF
DESIGN			74000				4700	
Jun-01	40223		77492			E		E
Jul-01	34458		59171			E		E
Aug-01	42983		79481		959		1847	
Sep-01	53764		64482		1445		1621	
Oct-01	40375		41774		1834		2718	
Nov-01	32083		42009		1797		3425	
Dec-01	37454		41683		1709		2967	
Jan-02	27448		53668		1765		3018	
Feb-02	19517		37778		2890		3042	
Mar-02	42983		79491		959		1847	
Apr-02	49111		74910		2629		5071	
May-02	47		47		658		2597	
Jun-02	21206		31038		1737		4514	
Jul-02	26805		32265		684		2116	
Aug-02	32695		48574		1368		2382	
Sep-02	44733		62413		1138		1600	
Oct-02	57973		103951		1343		2370	
Nov-02	43769		82936		1493		3020	
Dec-02	23879		52866		1395		2840	
Jan-03	30805		42732		2362		3341	
Feb-03	33078		59544		1850		2868	
Mar-03	32381		63082		1665		2656	
Apr-03	27108		44023		3539		1992	
May-03	11883		23644		932		1860	
Jun-03	41046		80338		2547		4018	
Jul-03	30371		59632		2450		4083	
Aug-03	29070		42938		1880		3003	
Sep-03	38136		56384		2345		3556	
Oct-03	44139		81800		10 5		30	
Nov-03	41315		74242		2440		3607	
Dec-03	23029		37110		2055		2738	
Jan-04	29959		37426		2232		2827	
Feb-04	36598		58170		2636		3845	
Mar-04	36383		63733		2534		4161	
Apr-04	34521		55999		2418		3401	
May-04	37116		25183		2263		2924	
Jun-04	34312		57101		2208		3910	
Jul-04	19710		25833		1531		2068	

Quincy Industrial

Influent

	BOD				TKN (as N)			
	AVG LBS/DAY		MAX DAILY LBS/DAY		AVG LBS/DAY		MAX DAILY LBS/DAY	
	Value	QLF	Value	QLF	Value	QLF	Value	QLF
DESIGN			74000				4700	
Aug-04	22466		42801		1182		1649	
Sep-04	39730		75485		2153		2963	
Oct-04	45317		51273		1733		2617	
Nov-04	51488		63970		2486		3111	
Dec-04	30782		33096		2812		3032	
Jan-05	26816		39383		2071		3127	
Feb-05	25747		51317		1520		2071	
Mar-05	39556		43164		2489		3211	
Apr-05	25906		28949		1900		2312	
May-05	30323		37900		1987		2376	
Jun-05	23960		56001		1279		2653	
Jul-05	32242		36467		1797		2540	
Aug-05	27139		41874		1188		1635	
Sep-05	37896		72106		1512		2246	
Oct-05	39372		51823		2293		3493	
Nov-05	47854		59005		2362		2717	
Dec-05	20491		36467		1348		2433	
Jan-06	32518		46954		2685		3339	
Feb-06	20925		31323		1536		2049	
Mar-06	31582		39312		2332		3040	
AVG	33355		51614		1864		2795	

E = Analysis not done

Quincy Industrial

Effluent

		FLOW			
		AVG		MAX	
		MGD		MGD	
		Value	QLF	Value	QLF
Discharge limit				4.89	
Jun-01		3.1		4	
Jul-01		2 3		3.6	
Aug-01		2.1		3.7	
Sep-01		3.1		3.6	
Oct-01		3		3.5	
Nov-01		2.2		3 2	
Dec-01		1.9		2.8	
Jan-02		1.8		2.5	
Feb-02		2		2.8	
Mar-02		2		3.1	
Apr-02		1.38		2.97	
May-02		0 32		1.5	
Jun-02		2 23		3.29	
Jul-02		2.47		3.01	
Aug-02		2.2		3.18	
Sep-02		2.9		4 21	
Oct-02		3.18		3.82	
Nov-02		3		3 61	
Dec-02	25.06	1 58		2.6	
Jan-03		1 34		2.44	
Feb-03		2.4		3.59	
Mar-03		1.84		2.62	
Apr-03		1.84		2.74	
May-03		0.57		0.91	
Jun-03		2.28		3.37	
Jul-03		2.13		3.19	
Aug-03		2.6		3 43	
Sep-03		2 48		3.51	
Oct-03		0 93		1 06	

Quincy Industrial

Effluent

		FLOW			
		AVG		MAX	
		MGD		MGD	
		Value	QLF	Value	QLF
Discharge limit				4.89	
Nov-03		2.38		3.08	
Dec-03	22.48	1.69		2.94	
Jan-04		1.9		2.88	
Feb-04		2.07		2.57	
Mar-04		2.14		3.34	
Apr-04		1.64		2.54	
May-04		1.63		2.08	
Jun-04		1.75		2.67	
Jul-04		1.84		3.28	
Aug-04		2.58		3.21	
Sep-04		2.55		3.72	
Oct-04		3.27		3.88	
Nov-04		2.73		3.62	
Dec-04	25.82	1.72		2.92	
Jan-05		1.77		2.39	
Feb-05		1.94		3.48	
Mar-05		1.65		2.65	
Apr-05		1.44		2.41	
May-05		1.59		2.13	
Jun-05		1.19		2.72	
Jul-05		2.3		3.08	
Aug-05		1.81		2.62	
Sep-05		2.96		3.92	
Oct-05		3.04		4.78	
Nov-05		1.96		3.99	
Dec-05	23.33	1.68		3.13	
Jan-06		2.34		3.11	
Feb-06		2.37		3.6	
Mar-06		1.53		3.96	
AVG		2.08		3.08	

Quincy Industrial

Effluent

Shaded areas show non-compliance

	BOD								TSS								Ammonia (as N) [1]							
	AVG				MAX				AVG				MAX				AVG				MAX			
	LBS/DAY		MG/L		LBS/DAY		MG/L		LBS/DAY		MG/L		LBS/DAY		MG/L		LBS/DAY		MG/L		LBS/DAY		MG/L	
	Value	QLF	Value	QLF	Value	QLF	Value	QLF	Value	QLF	Value	QLF	Value	QLF	Value	QLF	Value	QLF	Value	QLF	Value	QLF	Value	QLF
Summer limit	1705		51.1		3176		95.2		3636		109		7272		218		39.8		1.19		79.8		2.39	
Winter limit	2168		65		4337		130		1968		59		3936		118		48.2		1.45		96.7		2.9	
Jun-01	600		33		922		38		1600		91		2815		116		370		19		680		28	
Jul-01	249		15		310		21		687		40		785		50		321		18.7		420		25	
Aug-01	180		12		243		14		543		36		785		42		391		24.8		555		29.7	
Sep-01	210		9		248		12		601		26		662		32		460		19.4		649		25.7	
Oct-01	463		18		702		28		1147		46		1471		60		250		10		258		10.9	
Nov-01	402		20		621		28		1169		58		1943		89		213		11.4		291		12.2	
Dec-01	398		23		457		29		539		31		739		41		251		14.4		264		15.8	
Jan-02	652		43		866		49		1129		73		1669		115		315		22.1		396		27.1	
Feb-02	911		51		1261		54		1444		87		1635		130		245		13.5		362		15.5	
Mar-02	565		32		720		47		1090		61		1554		68		191		10.9		229		12.1	
Apr-02	304		22		462		33		646		48		991		58		38		2.5		87		3.5	
May-02	50		29		70		35		153		86		226		104		15.6		9.44		19.8		13.5	
Jun-02	858		42		1377		63		2072		108		2753		126		338.1		17.93		428.2		23.3	
Jul-02	1149		65		3470		219		1765		93		3296		208		243.2		12.42		316.9		20	
Aug-02	438		26.2		717		37		1259.7		70		2732		120		55.2		3.65		87.4		5.4	
Sep-02	966		43.6		1143		52.1		2668.5		123		3220		144		83.3		3.59		135.4		5.63	
Oct-02	1230		44.7		1704		57.4		2494.9		91		3503		118		106.1		3.97		152.3		5.45	
Nov-02	461		18.6		617		23.5		1001.4		40		1451		60		61.6		2.45		99.4		4.11	
Dec-02	339		24.4		627		28.9		466		37		852		44		219.2		16.63		412		26.8	
Jan-03	140		11.3		188		15.8		572.4		48		976		52		94		10.36		183.5		17.6	
Feb-03	484		23.7		910		30.4		741.2		35		1166		54		15.3		1.02		37		2.49	
Mar-03	554		34.1		843		42.2		860.8		56		1097		30		6.8		0.48		10.6		0.66	
Apr-03	485		33.7		766		42.2		1278.2		98		1725		143		4.5		0.26		11.6		0.54	
May-03	197		47.6		248		84.8		352.1		90		514		144		66.9		13.88		138		21.3	
Jun-03	747		38.6		1093		51.8		1428.8		107		1907		207		108.7		8.92		238.4		18.9	
Jul-03	882		42.6		1969		74		2263.5		109		4150		156		162.9		8.36		213.4		10.7	
Aug-03	758		39		1182		75		2186.1		106		2560		131		73.2		2.93		254		9.92	
Sep-03	780		39.3		931		55		2178.9		108		2573		127		84		3.72		180.4		6.78	
Oct-03	285		10.5		878		30		1391.9		56		1801		80		276		10.25		412.1		14.2	
Nov-03	311		13.7		419		18.8		1216		55.8		1476		60		52.2		1.67		42.7		2.95	
Dec-03	310		17.3		624		27		672		41.8		970		55		469.6		28.05		882.5		45.9	
Jan-04	253		14.4		410		22.2		373		23.8		569		27		372.5		22.2		637.5		28	
Feb-04	234		13.1		283		16.5		762		42.8		1203		70		185.2		10.25		282.2		13.7	
Mar-04	561		28		848		44.2		1046		53		1304		68		76		3.78		135		6.3	

Quincy Industrial

Effluent

Shaded areas show non-compliance

BOD

	AVG				MAX			
	LBS/DAY		MG/L		LBS/DAY		MG/L	
	Value	QLF	Value	QLF	Value	QLF	Value	QLF
Summer limit	1705		51.1		3176		95.2	
Winter limit	2168		65		4337		130	
Apr-04	500		38.7		698		45	
May-04	349		26.8		586		44.2	
Jun-04	382		25.5		677		32.2	
Jul-04	223		15.9		448		28	
Aug-04	779		34.6		1041		48	
Sep-04	599		24.7		1024		40	
Oct-04	1417		50.4		2094		81	
Nov-04	1485		62.5		1740		65	
Dec-04	720		62.1		1146		82.5	
Jan-05	1032		57.7		1285		66.4	
Feb-05	811		47.5		1257		60	
Mar-05	1217		90.2		2575		**186**	
Apr-05	**2972**		**229.5**		**3956**		**279**	
May-05	**6733**		**443.3**		**11759**		**750**	
Jun-05	480		45.3		851		50	
Jul-05	635		33.6		914		44	
Aug-05	341		21.8		522		34	
Sep-05	701		28.5		1463		45.8	
Oct-05	806		30.2		1659		58.5	
Nov-05	652		26		1497		57	
Dec-05	771		44.4		1813		97.5	
Jan-06	419		19.7		647		33	
Feb-06	327		15.5		692		28.5	
Mar-06	220		17.3		386		37	
AVG	556.5714		25.94286		1165.286		51.04286	

sept 05-mar 06)

TSS

	AVG				MAX			
	LBS/DAY		MG/L		LBS/DAY		MG/L	
	Value	QLF	Value	QLF	Value	QLF	Value	QLF
	3636		109		7272		218	
	1968		59		3936		118	
	965		73.4		1386		94	
	842		65		928		72	
	864		53.5		1492		71	
	1465		99		2323		132	
	2337		101.8		3358		132	
	1615		68.2		2560		100	
	2633		91.8		3495		108	
	1414		58		1954		73	
	720		56.4		1761		96	
	828		46.9		990		56	
	825		57		1078		83	
	1758		**129.6**		2547		**184**	
	2422		**184.5**		3404		**260**	
	6030		**399.3**		**9060**		**510**	
	1137		107		2132		118	
	1777		96.3		2114		102	
	1624		99.8		2404		134	
	1338		61.5		3127		115	
	1413		52.5		1635		66	
	730		39.3		1708		65	
	546		32.5		707		38	
	598		26		954		38	
	573		25		1262		52	
	358		27.2		495		40	
	793.7143		37.71429		1412.571		59.14286	

Ammonia (as N) [1]

	AVG				MAX			
	LBS/DAY		MG/L		LBS/DAY		MG/L	
	Value	QLF	Value	QLF	Value	QLF	Value	QLF
	39.8		1.19		79.8		2.39	
	48.2		1.45		96.7		2.9	
	56.1		**4.2**		**116.8**		**6.9**	
	46.7		**3.62**		65.8		**5.16**	
	42.3		**3.48**		58.8		**7.46**	
	8.7		0.64		19.1		1.58	
	37.5		**1.73**		60.9		**2.81**	
	28.3		1.13		63		**2.46**	
	428.8		**15.02**		**559.8**		**17.3**	
	276.8		**12**		**487.1**		**18.6**	
	269.4		**22.74**		**495.1**		**28**	
	372.7		**20.83**		**479.9**		**24.8**	
	371.3		**23.18**		**453.7**		**26.9**	
	518		**38.44**		**679.8**		**49.4**	
	825		**63.8**		**1076.6**		**69.4**	
	1371.6		**90.3**		**1707.1**		**107.9**	
	489.6		**51.88**		**709.4**		**86.8**	
	273.6		**14.25**		**399.8**		**19.1**	
	159.7		**9.96**		**227.1**		**19.6**	
	12.9		0.53		23.1		0.85	
	16.3		0.59		30.3		1.07	
	26.7		1.24		57.6		2.9	
	4		0.24		5.4		0.29	
	90.1		**4.82**		**306.6**		17.1	
	23.2		1.1		52.9		1.4	
	10.6		0.75		17.7		1.18	
	26.25714		1.324286		67.65714		3.541429	

[1] Compliance with summer limits began April 2002
Compliance with winter limits began November 2002

Quincy Industrial

Effluent

Shaded areas show non-compliance

Fecal Coliforms [2]

	AVG #/100 ML		MAX #/100 ML	
	Value	QLF	Value	QLF
year around limit			50	
Jun-01	310		350	
Jul-01	333		800	
Aug-01	219		338	
Sep-01	230		278	
Oct-01	84		220	
Nov-01	2209		90000	
Dec-01	5122		9000	
Jan-02	1989		16000	
Feb-02	229		500	
Mar-02	2303		16000	
Apr-02	637.9		3000	
May-02	38		80	
Jun-02	2533		16000	
Jul-02	81		500	
Aug-02	353		3000	
Sep-02	448		2400	
Oct-02	5903		16000	
Nov-02	86		230	
Dec-02	3809		9000	
Jan-03	959		16000	
Feb-03	1661		9000	
Mar-03	416		16000	
Apr-03	921		3000	
May-03	19		50	
Jun-03	377		16000	
Jul-03	703		3000	
Aug-03	365		16000	
Sep-03	880		5000	
Oct-03	123		2400	
Nov-03	248		2400	
Dec-03	7566		16000	
Jan-04	4960		16000	
Feb-04	1885		2200	
Mar-04	8343		25100	

Dissolved Oxygen [3]

	AVG MG/L		MAX MG/L		MIN MG/L		MIN PERCENT	
	Value	QLF	Value	QLF	Value	QLF	Value	QLF
year around limit					8			
Jun-01	12.2				2.4		8.8	
Jul-01	5.3				2.3			E
Aug-01	7.6				3.4		41	
Sep-01	5.1				3.6		40	
Oct-01	6.5				3.1		29	
Nov-01	5.9				3.6		30	
Dec-01	8.1				6		46	
Jan-02	3.95				1.3		28	
Feb-02	6.04				3.3		48	
Mar-02	7.8				0.5		64	
Apr-02	6.9				0.4		68	
May-02	7.8				0.6		83	
Jun-02	1.45				0.2		16.4	
Jul-02	6				0.5		74.3	
Aug-02	10.6				5.7		129	
Sep-02	7.5				0.3		85	
Oct-02	12.7				2.2		129	
Nov-02	12.9				5.8		116	
Dec-02	4.9				0.9		40	
Jan-03	12.5				9.7		100	
Feb-03	11.5				6.2		98	
Mar-03	11.2				6.1		104	
Apr-03	19.8				6.6		118	
May-03	10.9				4		39	
Jun-03	12.7				1.2		15	
Jul-03	8.4				0.5		102	
Aug-03	12.7				2.6		152	
Sep-03	11.7				4.2		129	
Oct-03	10.5				1.6		110	
Nov-03	12				6.4		101	
Dec-03	7.8				0.8		61	
Jan-04	5.8				1.1		48	
Feb-04	16.3				9.8		137	
Mar-04	14.1				9.8		134	

Quincy Industrial

Effluent

Temperature [4]

	AVG °C		MAX °C	
	Value	QLF	Value	QLF
year around limit			22.5	
Jun-01	6		9	
Jul-01	19		24	
Aug-01	21.4		24	
Sep-01	17.7		20	
Oct-01	11		16	
Nov-01	6.4		8	
Dec-01	2		3	
Jan-02	2.1		4	
Feb-02	3.6		5	
Mar-02	5.4		11	
Apr-02	11.7		16	
May-02	14.5		19	
Jun-02	19.8		24	
Jul-02	22.9		25	
Aug-02	22		24	
Sep-02	19		21	
Oct-02	14		17	
Nov-02	9		12	
Dec-02	5		8	
Jan-03	4		8	
Feb-03	6		8	
Mar-03	10		14	
Apr-03	13		16	
May-03	15		21	
Jun-03	20		24	
Jul-03	23		26	
Aug-03	22		25	
Sep-03	18		21	
Oct-03	15		19	
Nov-03	6		9	
Dec-03	3		5	
Jan-04	4		9	
Feb-04	6		8	
Mar-04	11		14	

Quincy Industrial

Effluent

Shaded areas show non-compliance

Fecal Coliforms [2]

	AVG #/100 ML		MAX #/100 ML	
	Value	QLF	Value	QLF
year around limit			50	
Apr-04	211		879	
May-04	3603		11566	
Jun-04	166		224	
Jul-04	913		2000	
Aug-04	231		467	
Sep-04	354		8334	
Oct-04	3081		16000	
Nov-04	6140		16000	
Dec-04	7106		16000	
Jan-05	11486		16000	
Feb-05	14866		250000	
Mar-05	32		12171	
Apr-05	10582		58667	
May-05	23907		84000	
Jun-05	3761		16867	
Jul-05	553		1167	
Aug-05	1330		4534	
Sep-05	15		39	
Oct-05	7		14	
Nov-05		E	0	
Dec-05	22		33	
Jan-06	3		134	
Feb-06	0		0	
Mar-06	2		8	
	8.166667		32.57143	

[2] Compliance began September 2005

Dissolved Oxygen [3]

	AVG MG/L		MAX MG/L		MIN MG/L		MIN PERCENT	
	Value	QLF	Value	QLF	Value	QLF	Value	QLF
year around limit					8			
Apr-04	20.1				15		153	
May-04	11.1				1.1		12	
Jun-04	14.4				4.6		55	
Jul-04	15.7				5.7		193	
Aug-04	17.6				4.3		57	
Sep-04	9.4				3.8		43	
Oct-04	1.9				1		21	
Nov-04	1.3				0.5		5	
Dec-04	1.6				0.6		5	
Jan-05	3.1				0.3		3	
Feb-05	2.9				0.5		4	
Mar-05	3.4				0.4		4	
Apr-05	0.3				0.1		1	
May-05	0.2				0.2		2	
Jun-05	2.8				1.4		16	
Jul-05	5				1.8		22	
Aug-05	7.5				1.1		13	
Sep-05	8.6		9.8		8		94	
Oct-05	8.5		9.5		8		90	
Nov-05	9.1		10.4		8.1		86	
Dec-05	10.8		16.1		8		75	
Jan-06	9.7		11.8		8.1		77	
Feb-06	9.8		12.8		8			E
Mar-06	10		11.8		8.1		85	

[3] Compliance began September 2005

E = data not reported

Quincy Industrial

Effluent

Temperature [4]

	AVG °C		MAX °C	
	Value	QLF	Value	QLF
year around limit			22.5	
	14		17	
	16		18	
	20		26	
	23		24	
	24		27	
	19		22	
	16		23	
	9		12	
	4		7	
	4		11	
	5		10	
	9		12	
	13		18	
	18		22	
	21		23	
	24		27	
	22		24	
	21		22	
	20		22	
	17		20	
	11		16	
	12.1		15.7	
	13.5		16.9	
	15.8		18.1	

[4] Compliance began September 2005